WALLOPS FLIGHT FACILITY OVERVIEW

Dave Pierce, Director

Key Science Themes

Discovering the Secrets of the Universe

Translate the knowledge and technologies derived from these areas of exploration to practical applications today.

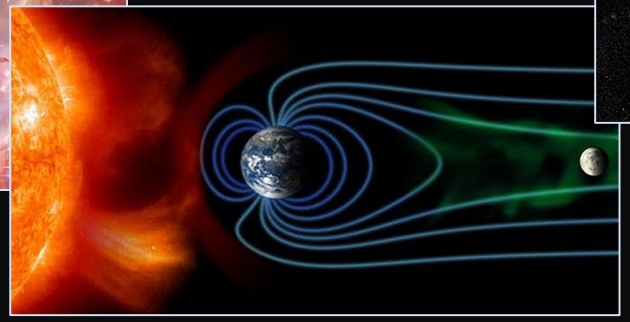
Searching for Life Elsewhere

Safeguarding and Improving Life on Earth

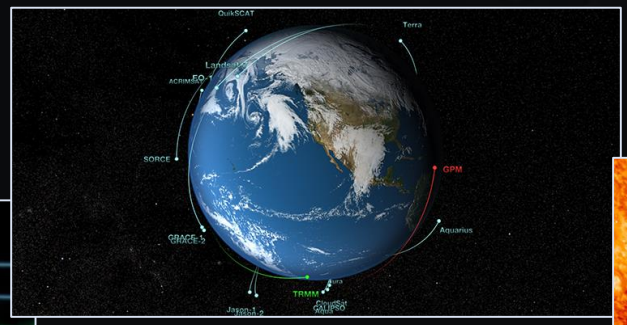
Our Lines of Business

Astrophysics

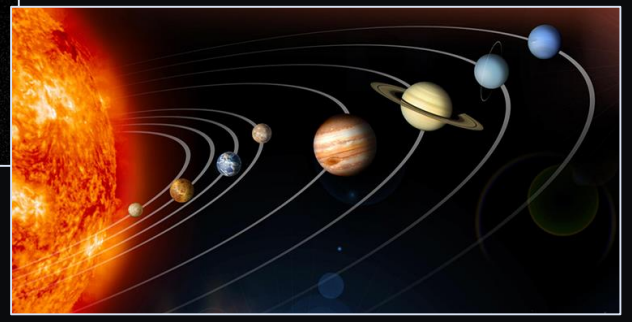
Heliophysics



Earth Science



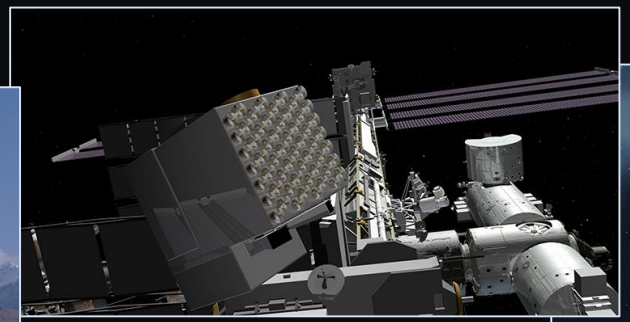
Planetary & Lunar Science



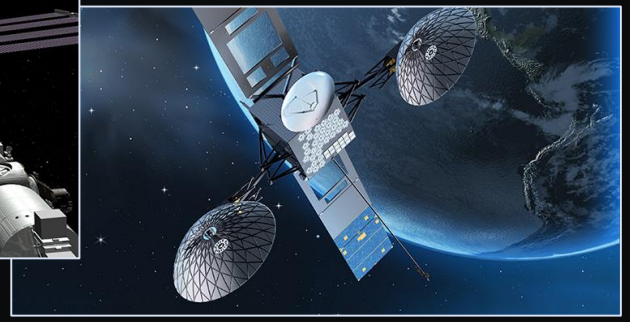
Human Exploration & Operations

Suborbital Platforms

Cross Cutting Technology And Capabilities



Communications & Navigation



Goddard Installations Across the Country


Greenbelt Campus


Wallops Island


IV&V


Columbia Scientific
Balloon Facility (CSBF)


White Sands Test Facility

The Wallops Mission

Wallops provides agile, low-cost flight and launch range services to meet government and commercial sector needs for accessing flight regimes worldwide from the surface to the moon and beyond


P-3 in Sao Tome, Africa

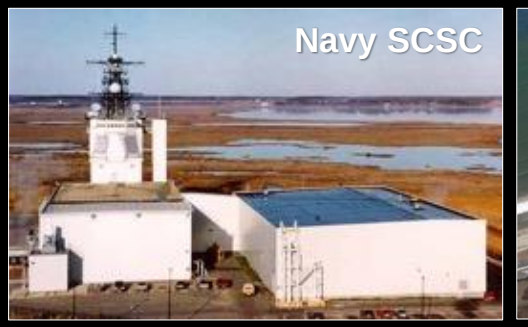

Palestine Launch


ASPIRE Launch

Wallops: A Unique National Asset

Multi-user/multi-tenant facility ideal for supporting satellite command and control, military operations, scientific investigations, technology development, and commercial aerospace


Field Carrier Landing Practice


Navy SCSC


Air Force Tower

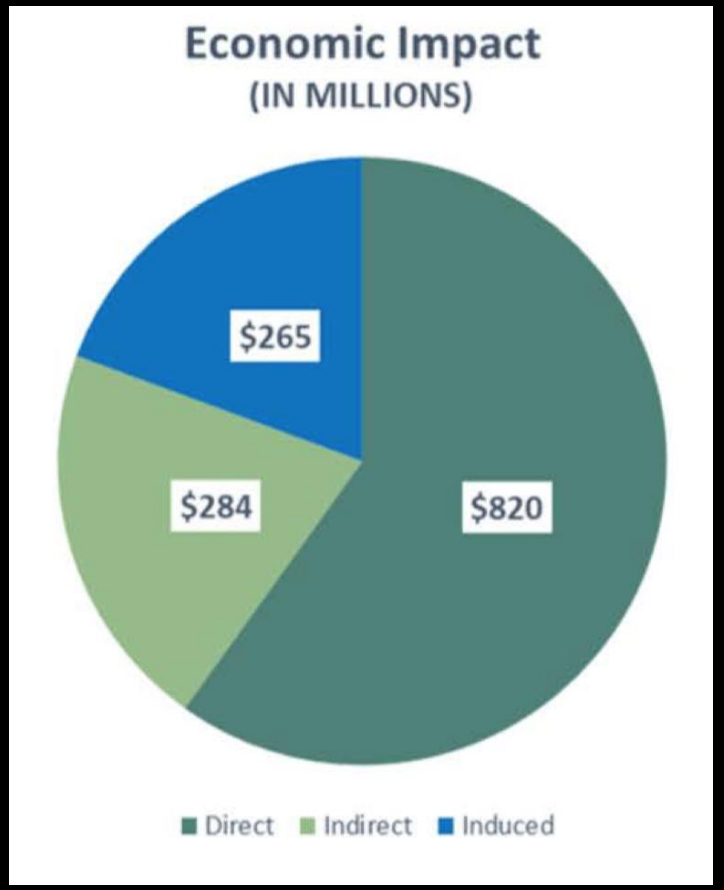

MARS North Island UAS Runway


Near Earth Network


MARS Pads 0A and 0B

Our Economic Impact

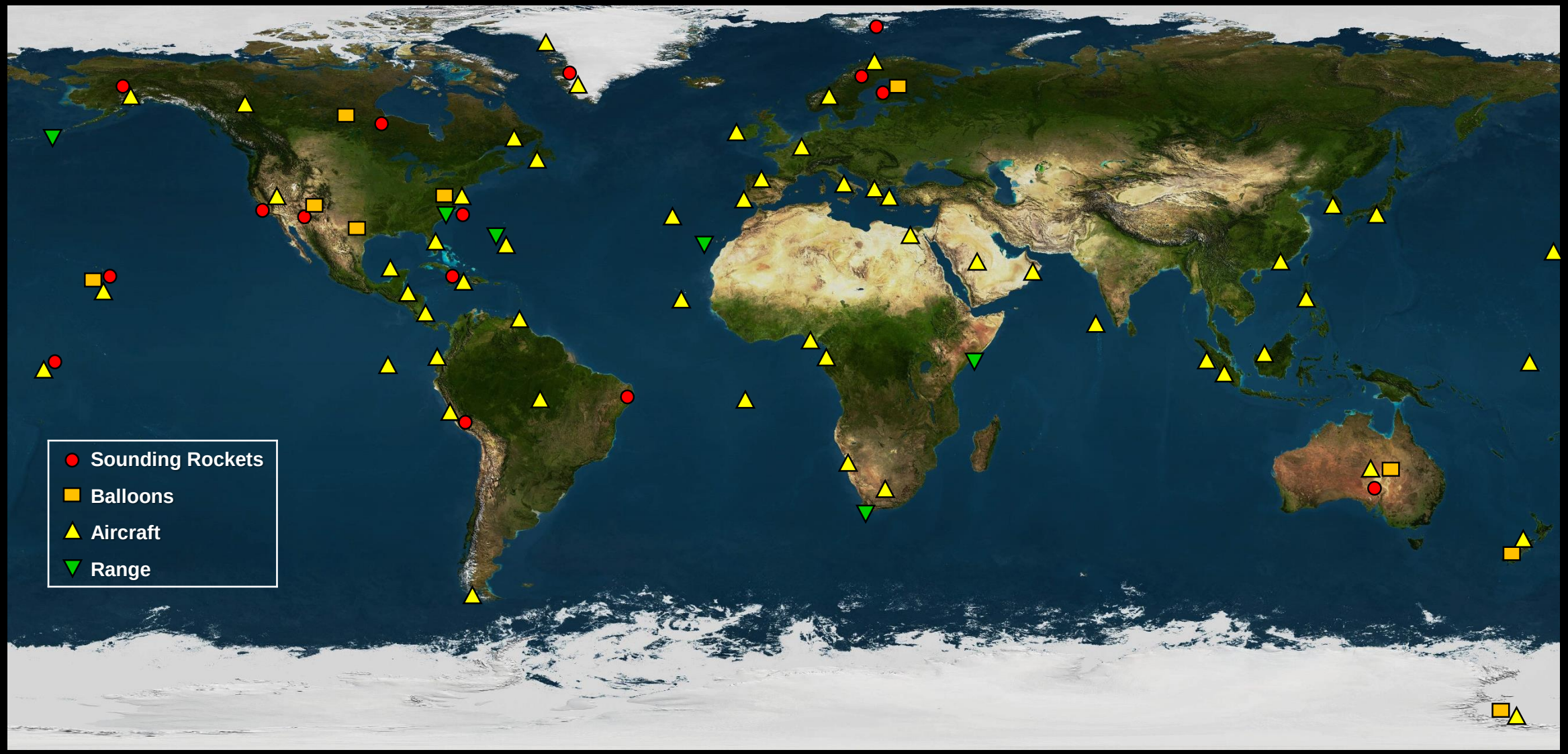
- An ODU-led study, published earlier this year, recently assessed the economic impact of Wallops Island
- Total estimated economic impact is $1.37B
  - Direct impacts: $820M
  - Indirect impacts: $284M
  - Induced impacts: $265M
- First-of-its-kind study included the entire Wallops complex:
  - NASA
  - U.S. Navy
  - NOAA
  - U.S. Coast Guard
  - Virginia Space
  - Northrop Grumman
  - Rocket Lab



What We Do…

- **Sounding Rockets**
  - ✓ Suborbital science rockets from worldwide launch sites
- **Scientific Balloons**
  - ✓ Upper atmosphere science missions from worldwide sites
- **Airborne Science**
  - ✓ Earth Science research using piloted and unmanned aircraft
- **Special Projects**
  - ✓ Small satellite development and operations
  - ✓ Hybrid flight projects that leverage our unique capabilities
- **Research Range and On-Orbit Operations**
  - ✓ Launch range supporting rocket/missile missions
  - ✓ Research airfield supporting aircraft/UAS operations and research
  - ✓ Mobile range enabling remote campaign missions
  - ✓ Satellite tracking of NASA spacecraft
- **Earth Science Research**
  - ✓ Precipitation, coastal processes, and ice sheet research
- **STEM Education Activities**
  - ✓ Hands-on flight projects for students and researcher training

Where We Go…



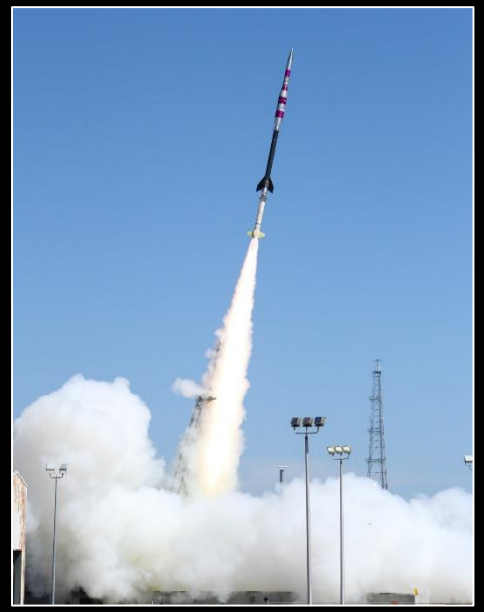
Suborbital Research Program

We have 3 primary suborbital carriers, plus smallsats

- **Sounding Rockets:**
  16 different vehicles that can carry 100 – 1,500 lbs. of payload into space at altitudes to 60-900 miles for durations of up to 30 minutes.

- **Balloons**
  Platform that can carry small to very large payloads (up to 8,000 lbs.) to various atmospheric levels up to “near space” at 160,000 ft. Flights last from a few hours up to 100 days – Ultra Long Duration Balloon (ULDB).

- **Aircraft/UAS**
  Platforms that can carry small to very large payloads (up to 1,000 lbs.) to various atmospheric up to commercial air levels at around 30,000 ft. Flights last from minutes to hours.



Sounding Rockets Program Capabilities

- Provides suborbital launch vehicles, payload development, and field operations support.
- Provide researchers with unparalleled opportunities to build, test, and fly new instrument and sensor design concepts while simultaneously conducting world class scientific research.
- Operations conducted from fixed launch sites as well as mobile sites around the world.
- Characteristics:
  - ✓ Low cost
  - ✓ Quick turnaround
  - ✓ Minimalistic project teams
  - ✓ Highly flexible and agile
- Sounding Rockets Program Services:
  - ✓ Payload development
  - ✓ Mission and safety analysis
  - ✓ Launch vehicles
  - ✓ Operations support
  - ✓ Technology development

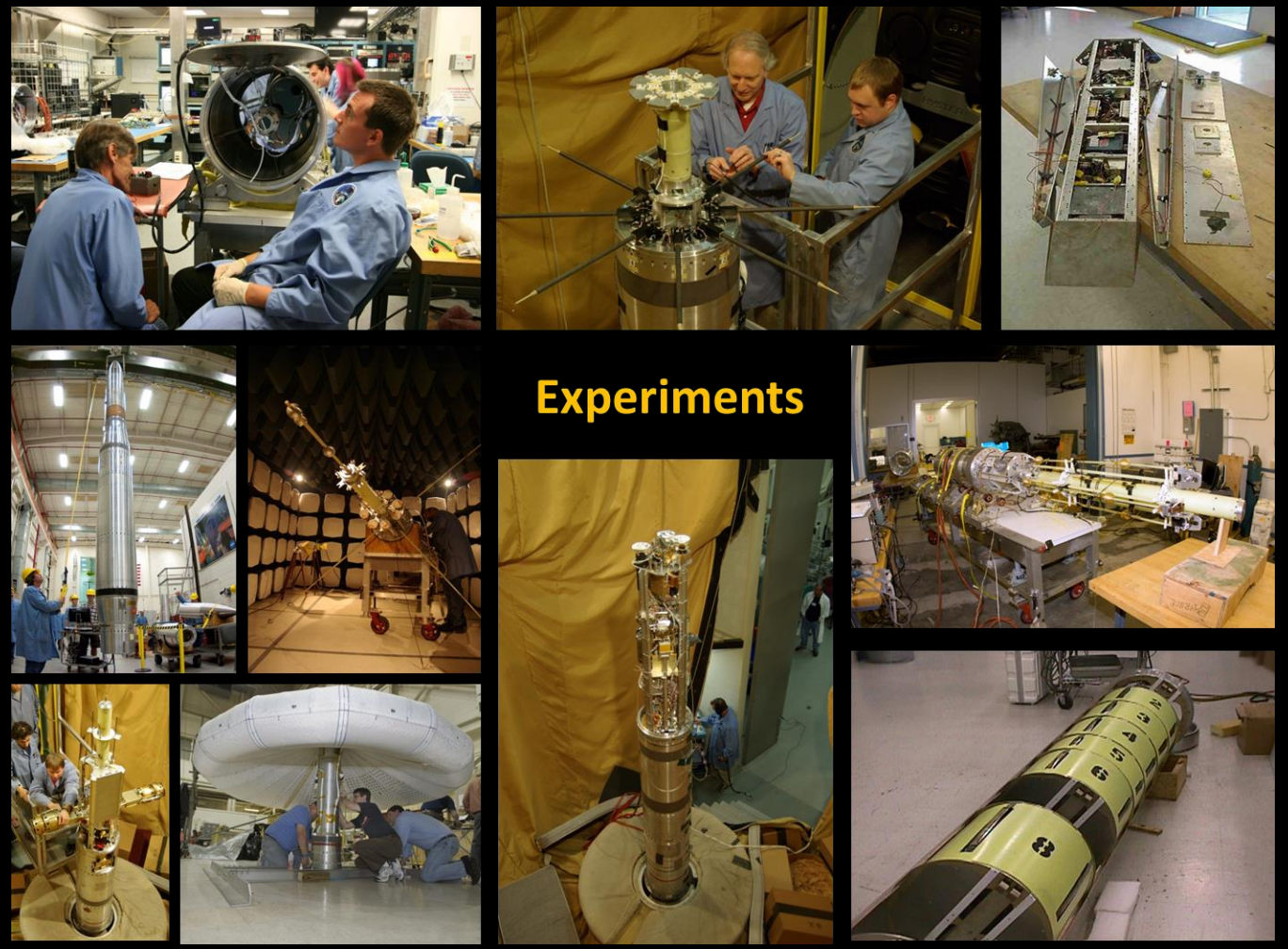
Sounding Rockets

- Supports very sophisticated scientific payloads
  - Deployables, multi bodies
  - Ability to support dynamic science events (e.g., auroras, ionospheric research, thunderstorms).
  - Conduct hands-on Student launch missions

FY2019
20 Rockets Launches
4 campaigns
~ 300 undergrad/ graduate students participation
~ 30 Research Institutions

FY2019 Sounding Rocket Launches

- Wallops Island (4)
- Norway (6)
- White Sands Missile Range, NM (8)
- Kwajalein Atoll (2)



2019 Kwajalein Campaign

- Two Sounding Rockets were launched into a science event of interest from Kwajalein Atoll on June 19.
- NASA LaRC Falcon aircraft provided aerial photography of the ionospheric experiment.
- TMA releases occurred on both the up leg and down leg. The aircraft reported seeing five of the six lithium ignitions.

Balloon Program Capabilities

- Provides low-cost, quick response, near space access for conducting cutting-edge science and technological investigations all over the world.
- Investigations include fundamental scientific discoveries that contribute to our understanding of the Earth, the Sun, the solar system, and universe.
- Provides excellent training for NASA scientists and engineers.

Research Range Today

- The Research Range consists of a launch range and associated tracking, data acquisition, and control instrumentation systems.

- Scientists and engineers from NASA, other U.S. government agencies, colleges and universities, commercial organizations, and the world-wide scientific community have conducted experiments using the range.

- The Range provides services necessary for a wide variety of research, development, and operational missions, including rocket, balloon and aerial vehicle flights.

- Manages and operates small satellite tracking stations locally.

- Has the capability to support launch operations worldwide with mobile range instrumentation and equipment.


Bermuda Tracking Station


Range Control Center


Mission Operations Control Center


NG-11 – April 2019

Fleet Carrier Landing Practice (FCLP)

In mid-March, the Navy/Fleet Forces Command & NASA signed an agreement supporting FCLP operations.

Provides for critical Navy training flights at Wallops before Pilots join the fleet.

Navy renewed FCLP agreement; Phase 6 runway resurfacing awarded 5/15. Pre-construction underway.

E-2C

C-2

Research Range of the Future

- WFF is actively partnering with VASpace to enable all aspects of Range capabilities to support missions across the user community to the greatest national benefit, including scientific discovery, technological innovation, exploration, commercial space, national defense and education.

- WFF is working with VASpace in supporting emerging commercial nano-launch capabilities from its launch range at WFF, strategically working with our partners to exploit the growing Range capabilities as a new tool to power innovation, while also reducing the time, risk and cost of supporting projects.

- "**Range of the Future**" (ROTF) initiative including systems/interfaces to support customer projects, X-Band Debris radars, Autonomous Flight Safety Systems (AFSS), etc.

Upcoming Wallops Launches

- July — ACT-America aircraft campaign (science)
- Aug –Sept. — RockSat-X, SubTec (education/technology)
- July-October — CAMPEX P-3 aircraft campaign (science)
- August-October — WSMR Sounding Rockets Campaign (science)
- August-October — Ft. Sumner NM Balloon Campaign (science)
- Sept 8-10 — US Navy Launch GQM-163A Target
- October 19 — Antares NG-12 Launch
- November — WSMR Sounding Rockets Campaign (science)
- November — L-129 (Minotaur IV)
- December — DARPA Challenge

Coming soon from Wallops: Rocket Lab!

Rocket Lab Electron launches from Mahia, New Zealand

Wallops Facility Investments and upgrades

Officials broke ground on a solar energy project at NASA Wallops Flight Facility in Wallops, June 6, 2019. The project is aimed at providing 80% of the electric power of the facility by 2021.

NAVFAC starting a Child Day Care design effort at WFF; Working to identify NASA funding requirements.

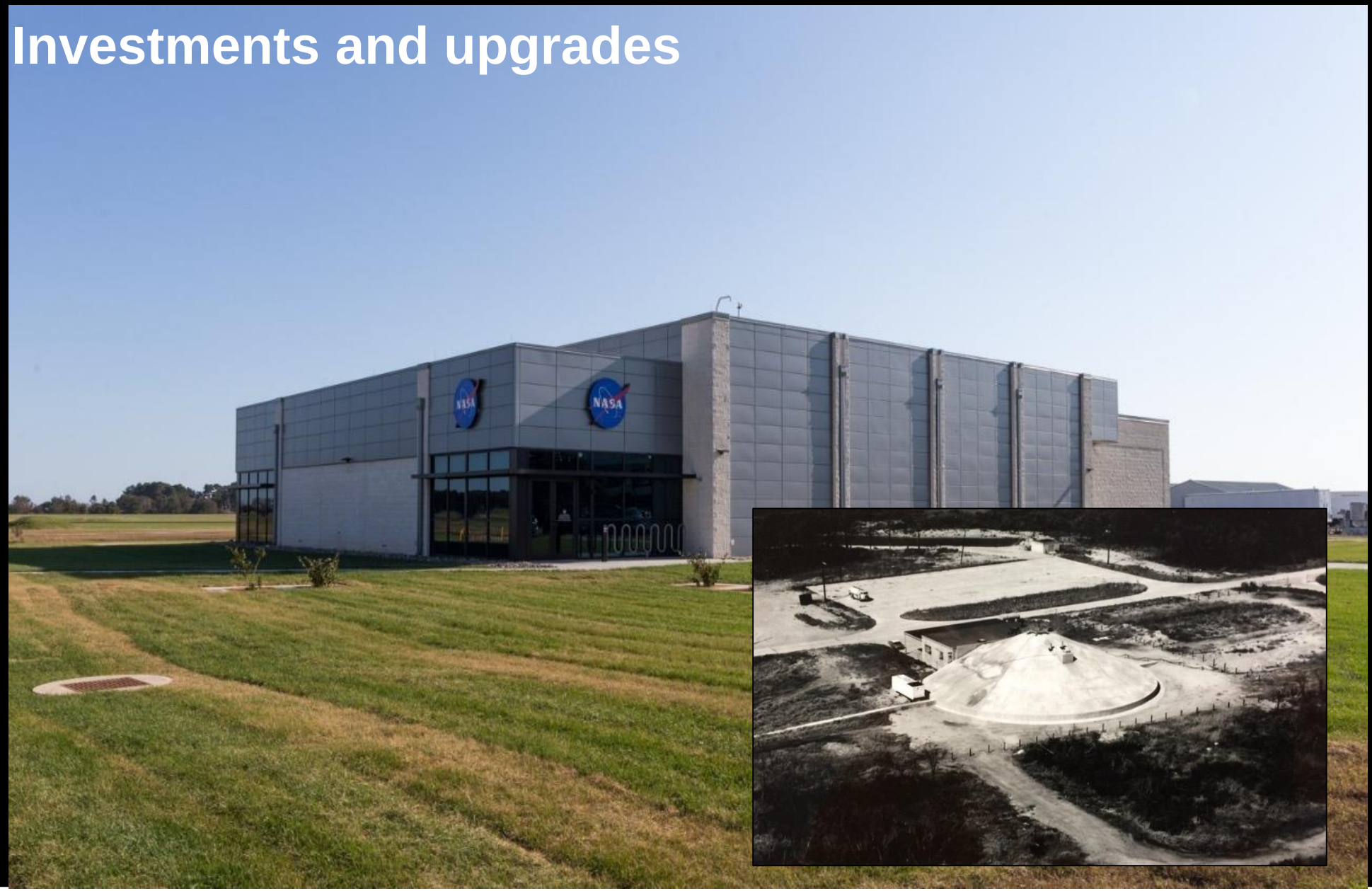
Range Control Center

Runway resurfacing

Wallops Solar Farm

Wallops Facility Investments and upgrades

- Mission Operations Control Center
- Three Ops Floors for mission support + SCIF
- Replaces Launch Control Center, built in 1959



Wallops Facility Investments and upgrades

- NASA’s Bermuda Tracking Station
  - Recently completed a $5.3 million project to upgrade/renovate the facility
  - Key capability for providing tracking, telemetry, command and control during range ops
  - Will support Moon 2024 operations

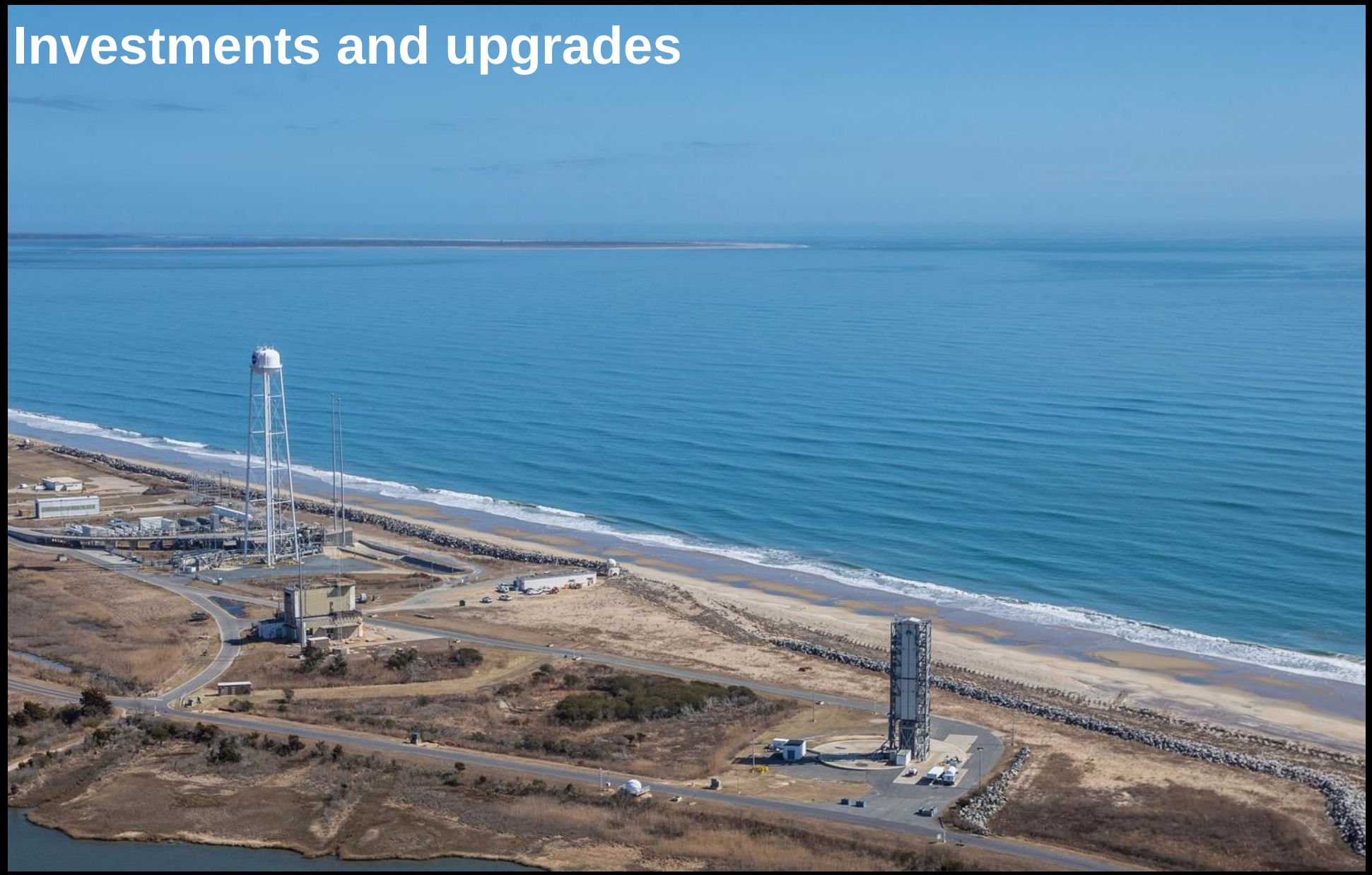
Bermuda Tracking Station

Wallops Facility Investments and upgrades

- New Island Fire Station
- Replaces temporary facility occupied since 1986

Wallops Facility Investments and upgrades

- Shoreline Protection – $25M Beach Renourishment project begins in 2019
- Key to protecting the $1.2B in assets on Wallops Island



Wallops Education Activities

Student Learning Opportunities

WFF Rocket Week June 14-21, hosted over 300 students from 24 countries working on a variety of payloads, including RockOn!, RockSat-C, Cubes. Culminated in the launch of RockOn! . The payload was recovered and returned for the students to obtain their data.

Conducted the 7th annual Virginia Space Coast Scholars Summer Academy with 40 Virginia high school sophomores at WFF, sponsored by the Virginia Commonwealth.

Continued planning for NASA Community College Aerospace Scholars (NCAS) September workshop.

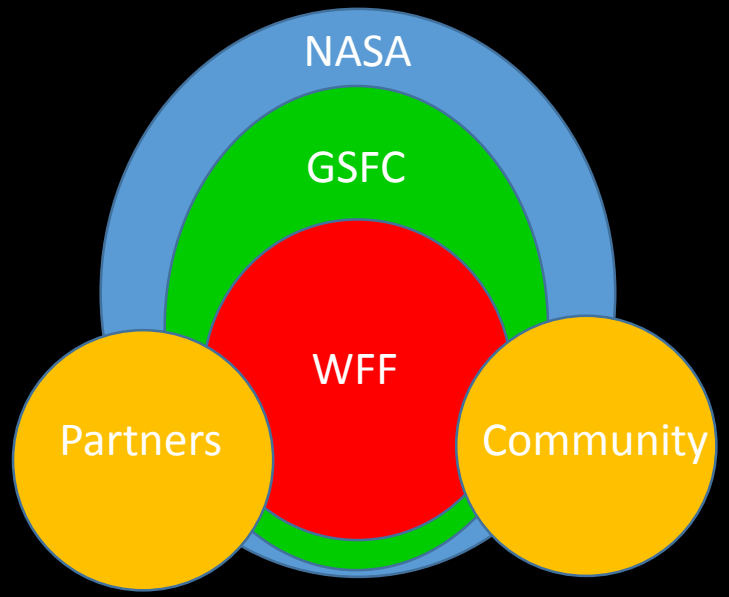
USIP – the Virginia CubeSat Constellation – Expected deployment from ISS July 3 2019.

Wallops is hosting over 60 summer interns.

Wallops Strategic Direction

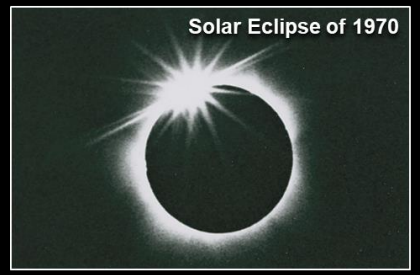
GSFC/Wallops Study

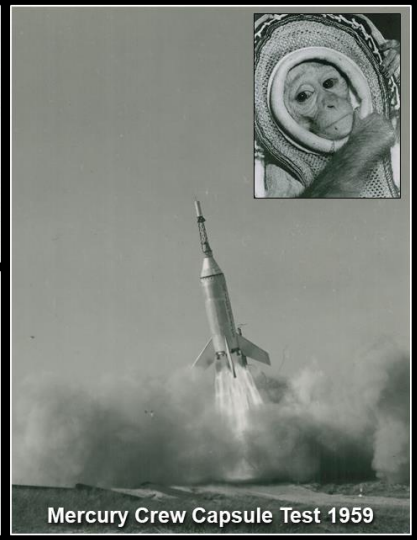
GSFC working study recommendations to create a more efficient operating model that maintains critical capabilities and meets current and future mission needs; Improves roles, maintains WFF agile mission culture, improves collaboration with partners and engagement with the community.



GSFC/Master Plan

GSFC vision plan was approved Aug 2018; *The Agency recognized WFF facilities as critical to NASA.* Team is now working Master Plan detailed analysis with Wallops site visit planned in Mid-August





Wallops' 75th Anniversary - June 27, 2020
GSFC/WFF has been extending humanity's reach and knowledge for 75 years.

Strong Support for Wallops

NASA is very grateful for the strong support from the commonwealth and proud to partner with VASpace to host Northrup Grumman at Wallops from the Mid-Atlantic Regional Space Port.

The nation’s vision for a robust, extended commercial and government presence at the Moon will certainly be enabled by the Wallops Launch Range.

Commercial space has become one of the lynchpins of our plans to move forward to the Moon – landing humans at the lunar South Pole by 2024.

Thanks to the Commonwealth for your continued support of NASA and Virginia's Eastern Shore!

Questions?